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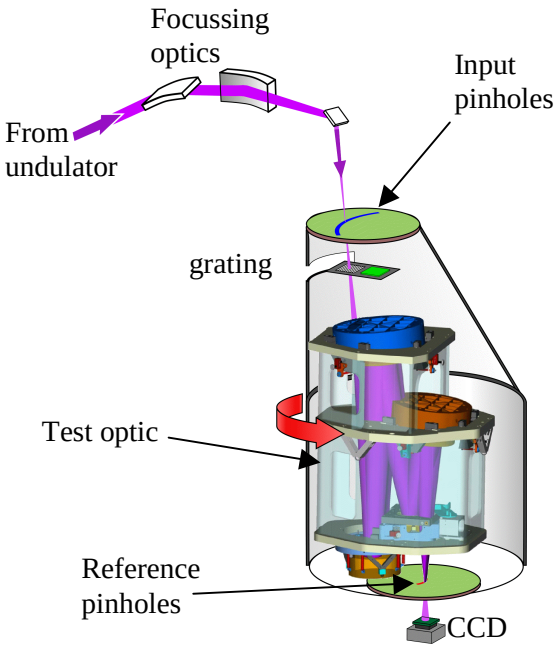

Fig. 1. Schematic of the EUV PS/PDI installed at an undulator beamline at Lawrence Berkeley National Laboratory's Advanced Light Source synchrotron radiation facility. A Kirkpatrick-Baez glancing-incidence optical system focuses the beamline radiation into a nominally-5-μm spot in the test optic object plane. Pinhole diffraction is used to produce both the probe and reference waves and a transmission grating is used as the beamsplitter.

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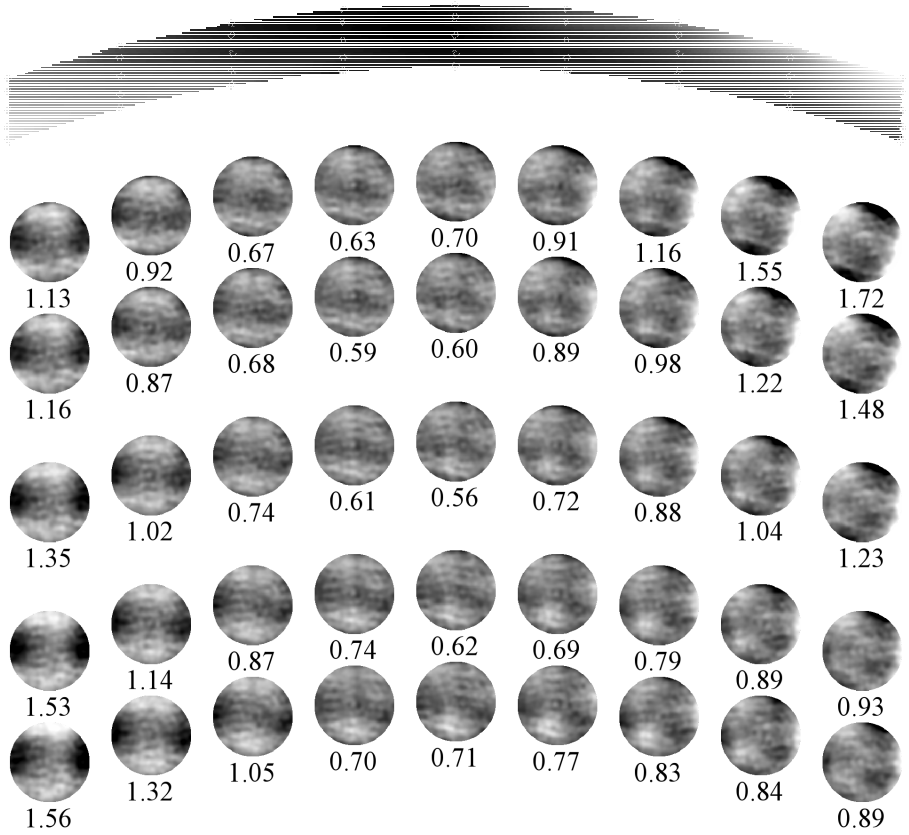

Fig 2 Wavefronts measured at each of the 45 different field points and contour map of the rms error across the field. The rms wavefront errors listed below each wavefront are in nm and are based on a 37-term Zernike polynomial fit to the wavefront with the measurement-dependent piston, tilt, and focus terms removed. The depicted wavefronts include higher spatial frequency content than is contained within the 37-term Zernike polynomial reconstructions. Each wavefront image is individually scaled.

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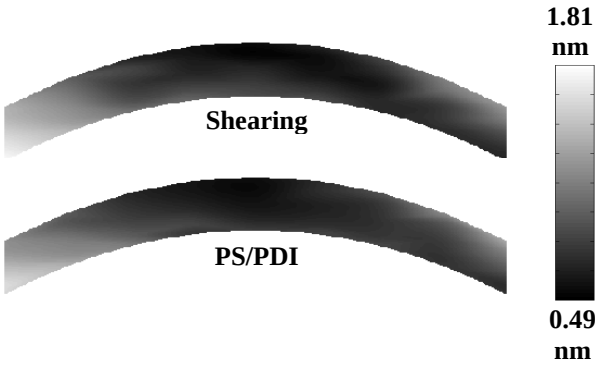

Fig. 3. Comparison between the final shearing measurement and the final PS/PDI measurement (both at-wavelenth). The contour maps are based on the rms error over a numerical aperture (NA) of 0.0915 as limited by the measurement NA of the shearing implementation used. For the comparison, the PS/PDI data was re-analyzed over the same grid size and NA as used for the shearing. The average agreement across the field is (0.25±0.06) nm.

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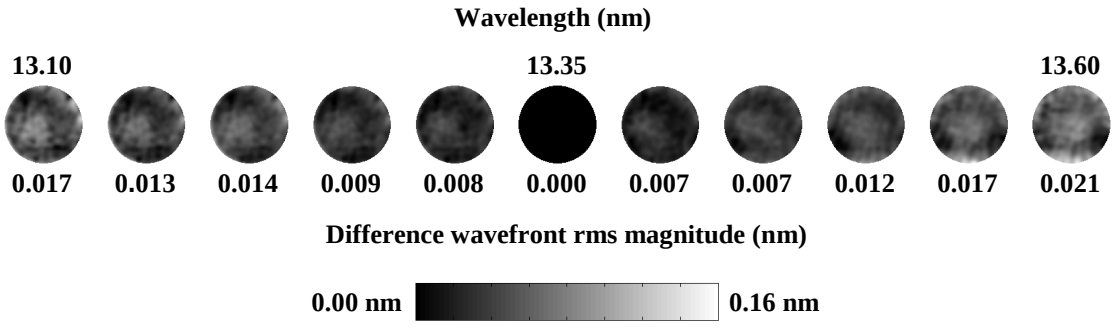

Fig. 4. Wavefront variation, as a function of wavelength, relative to the wavefront measured at a wavelength of 13.35 nm. This measurement was performed at the central field point where the wavefront error is approximately 0.6 nm rms.

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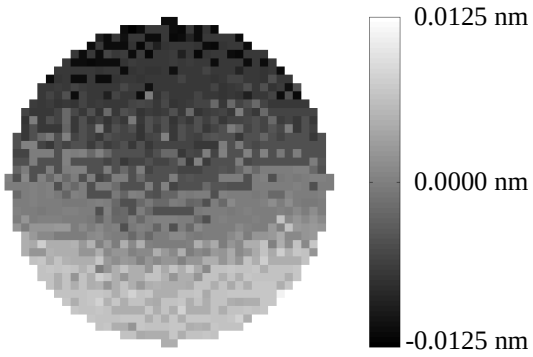

Fig. 5. Centroid wavelength change as a function of pupil position as measured at the central field point. The average centroid wavelength is 13.35 nm with a peak-to-valley linear variation of (0.015±0.002) nm across the pupil. Modeling results show an expected linear change of approximately 0.017 nm across the pupil.